UNIVERSITI PUTRA MALAYSIA

THE EFFECT OF TEXTUAL INPUT VERSUS ICONIC INPUT IN COMPUTER ASSISTED INSTRUCTION ON INTERVAL RECOGNITION

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By

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Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Master of Science

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia
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September 2004

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This study was initiated out of the growing concern of the prevailing poor sense of pitch intervals among music teacher trainees reflected the unsure perception and direction in their aural training. It was sought that in employing a computer assisted instruction approach in aural training with the use of an aural software will offer music teacher trainees an opportunity to work independently on their aural skills outside the confines of a formal aural lesson in the classroom. This study hopes to bring greater efficiency for music teacher educators to structure aural lessons tailored to music teacher trainees' pace and ability.

The objective of the study was to compare the effect of a textual input versus an iconic input in computer assisted instruction on interval recognition of music major

and non music major teacher trainees at a teacher's training college. The study also investigated the music teacher trainees' evaluation of the aural training software, *Auralia.* The textual input group (n=32) and iconic input group (n=32) consisted of music major (n=16) and non music major (n=16) teacher trainees in each input group. The textual input and the iconic input groups completed 20 drill and practice lessons in interval recognition. Both groups completed a progressive test at every session, a total of 20 progressive tests for the 20 lessons. At the end of the treatment in the study, each input group completed a final test from the aural software. Pretest and posttest of the same contents were administered to the groups before and after the study.

The results indicated there were no significant differences in interval recognition achievement in the final tests and posttests between the textual input (music major and non music major) and iconic input (music major and non music major) groups. The results also showed no significant differences in music teacher trainees' evaluation of the software between the textual input (music major and non music major) and iconic input (music major and non music major) group. This CAI study suggests that in employing two different inputs, a textual input or an iconic input using aural software had no significant differences on interval recognition.

Abstrak thesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Master Sains

KESAN PERBANDINGAN *INPUT TEXTUAL* DENGAN *INPUT ICONIC* DALAM PENGAJARAN BERBANTUKAN KOMPUTER KE ATAS PENGECAMAN JEDA

Oleh

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Kajian ini dijalankan atas timbulnya kesedaran terhadap kelemahan pada deria pic jeda di kalangan guru pelatih muzik yang menggambarkan persepsi dan arah tuju yang tidak pasti dalam latihan *aural* mereka. Ianya dilihat bahawa dengan menggunakan pendekatan pengajaran berbantukan komputer dan latihan menggunakan perisian *aural* menyediakan guru pelatih muzik peluang untuk meneruskan tugas dan kerja secara persendirian terhadap kemahiran *aural* dan tidak hanya tertumpu pada pelajaran *aural* secara formal dalam bilik darjah. Kajian ini diharapkan dapat memberi lebih efisien kepada pelatih guru muzik untuk menstruktur pelajaran mereka mengikut keupayaan dan kadar masa guru.

Tujuan utama kajian ini ialah untuk membandingkan keberkesanan *input textual* dengan *input* ikonik dalam pengajaran berbantukan komputer menggunakan perisian *aural* untuk pengecaman jeda bagi guru pelatih pengkhususan muzik dan guru pelatih muzik minor di maktab perguruan. Kajian juga menyelidik penilaian guru pelatih muzik berkenaan terhadap perisian latihan *aural*, *Auralia*. Setiap kumpulan mengandungi 16 orang guru pelatih pengkhususan muzik dan 16 orang guru pelatih muzik minor berjumlah 32 orang bagi setiap kumpulan kajian. Kumpulan *input textual* dan *input iconic* juga menyiapkan 20 kali latihan dan latih tubi dalam pelajaran pengecaman jeda. Kedua-dua kumpulan menghabiskan satu ujian progresif pada setiap pelajaran berjumlah 20 ujian progresif dalam 20 pelajaran. Di akhir rawatan kajian ini, setiap kumpulan menyelesaikan ujian akhir daripada perisian aural. Ujian pra dan pos yang mengandungi isi kandungan yang sama ditadbir kepada kedua-dua kumpulan sebelum dan sesudah kajian.

Keputusan menunjukkan tidak terdapat perbezaan signifikan dalam pencapaian pengecaman jeda antara kedua kumpulan *input textual* dan *input iconic* bagi guru pelatih pengkhususan muzik dan guru pelatih muzik minor pada kedua-dua ujian akhir dan ujian pos. Keputusan juga menunjukkan tidak terdapat perbezaan dalam penilaian guru pelatih berkenaan terhadap perisian kedua kumpulan *input textual* dan *input iconic* bagi guru pelatih pengkhususan muzik dan guru pelatih muzik minor. Kajian pengajaran berbantukan komputer ini menunjukkan bahawa dalam

menggunakan dua *input* yang berbeza, *input textual* atau *input iconic* dengan perisian latihan *aural* tidak mempunyai perbezaan yang siknifikan ke atas pengecaman jeda.

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My thanks to my family's deep understanding and patience in helping me to complete this study. In retrospect, it would be an act of ingratitude not to acknowledge God's blessing, His guidance and His granting me the wisdom and perseverance for the materialization and completion of this study.

I certify that an Examination Committee met on 14th September 2003 to conduct the final examination of Bernice Mong Chuey Mei on her Master of Science thesis entitled "The Effect of Textual Input Versus Iconic Input in Computer Assisted Instruction on Interval Recognition" in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

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This thesis submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the degree of Master of Science. The members of the Supervisory Committee as follows:

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DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UPM or other institutions.

BERNICE MONG CHUEY MEI

Date: 1 DEC 2004

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LIST OF ABBREVIATIONS

ABRSM	Associated Board of the Royal School of Music
ANOVA	Analysis of Variance
CAI	Computer Assisted Instruction
CAL	Characteristics of Adult Learning
CBE	Computer Based Education
CBI	Computer Based Integration
CBME	Computer Based Music Education
CD-ROM	Compact Disc Read Only Memory
CIE	Computer in Education
CRI	Criterion Referenced Instruction
EPRD	Education Planning and Research Division
GB	Gigabyte
GED	General Education Development
GUIDO	Graded Units for Interactive Dictation Operations
HZ	Hertz
IBM-PC	International Business Machine-Personal Computer
KDC	*Kursus Dalam Cuti* (Holiday Course)
KDPM	*Kursus Diploma Perguruan Malaysia* (Malaysian Diploma in Teaching)
MEDICI	Melodic Dictation Computerized Instruction
MB	Megabyte
NEC	Nippon Electric Company
PLATO	Programmed Logic for Automated Teaching Operations
RAM	Random Access Memory
SPSS	Statistical Package for Social Studies
THE	Technology Horizons in Education
UNDP	United Nations Development Programme

GLOSSARY OF TERMS

The following terms are explained in the context of the study.

Aural development

Musical discrimination conducted through progressive ear training.

Aural skills

Aural skills are the knowledge applied in the teaching of music. A music teacher needs to be able to discern and correct the wrong notes and faulty intonation.

Caklempong

A traditional gong chime from Negeri Sembilan, Malaysia. Its onomatopoeic name is derived from two words, *'cak'* and '*lempong*'. '*Cak*' refers to the vibrating sound made from the drums and '*lempong*' means the sound produced by the gong chimes. A standard *caklempong* ensemble consists of five sets of *bonang* (knobbed kettle gongs). Each set consists of a number of small tuned pot shaped knobbed kettle gongs resting horizontally over parallel cords on a wooden rack. The knobbed kettle gongs are hit with a pair of wooden sticks wound with strings for cushioning.

Chords

A chord is a combination of a minimum of two notes. The use of chords is the basic foundation of harmony.

Iconic input

It refers to the on-screen keyboard, one of the input devices available in the aural software, *Auralia* for teacher trainees to select the correct answer in interval recognition.

Interval

An interval is the distance between two notes. The quality and number describe the size of the intervals. Quality descriptions of the size of the intervals are described as major, minor and perfect. Numbers referring to the number of steps or note names that separate the two pitches describes the size of the interval. The numerical intervals, seconds (2), thirds (3), sixths (6) and sevenths (7) are described as major or minor depending when the upper note of the pair would occur in the major or minor scale of the lower note (tonic). The numerical intervals, octave (8), fourth (4) and fifth (5) are described as perfect in quality. For example a Major 3rd interval term means major is the quality of the interval and 3rd is the number in the interval. An

ascending melodic interval is in a rising direction, hearing the first pitch as the lower pitch followed by the second pitch or the higher pitch in an upward direction

Kompang

A traditional instrument using hand drums played by a group of players. Kompang playing are associated with festive occasions such as at the opening ceremony for an important function or at Malay weddings.

Melody

An organized and recognizable shape of a succession of notes varying in pitch.

Music software program

Software is data organized into a meaningful arrangement. Music software comprise of a range of music program types for a musical purpose. An aural software program is a type of musical application for an educational program used for tutorial applications in aural training.

Octave

An octave comprises of eight notes.

Pitch

Pitch is the frequency of vibrations that creates the quality of sound.

Rhythm

Revolves around the time aspect in music such as the beats, accents, measures, grouping of notes into beats, grouping of beats into measures and the grouping of measures into phrases.

Technology

Technology is an approach or a technique employed in a systematic and scientific knowledge in solving problems. Examples of technological devices include computers and all of music and non music peripherals that are needed to perform music tasks with computers such as electronic music keyboards, MIDI controllers, printers, scanners and CD players.